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10/562,677	05/16/2006	Yingfu Li	16554-005US1H310899PCTUS	3072

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EXAMINER

WOLLENBERGER, LOUIS V

ART UNIT	PAPER NUMBER
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1635

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11/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/562,677

Applicant(s)

LI ET AL.

Examiner

Louis V. Wollenberger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1 and 3-21 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Preliminary Amendment

Applicants' preliminary amendment to the claims, filed 5/16/2006, is acknowledged. With entry of the amendment, claims 1 and 3-21 are pending and subject to restriction as follows.

Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1, 3-12, drawn to a method of monitoring a chemical reaction in which substance A is converted to substance B. Election of this group requires the further election of a single method from claims 3, 4, 7, 8, 11, and 12, as explained below.

Group II, claim(s) 13-15, drawn to a method of detecting the presence of an enzyme capable of converting a substrate to a product in a test sample. Election of this group requires the further election of a single method from claims 14 and 15.

Group III, claim(s) 16, drawn to a method of quantitating an enzyme in a sample.

Group IV, claim(s) 17 and 18, drawn to a method of screening a test compound for inhibition of an enzyme. Election of this group requires the further election of a single enzyme from claim 18.

Group V, claim(s) 19, drawn to an enzyme inhibitor.

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Group VI, claim(s) 20 and 21, drawn to a kit for detecting modification of a substrate and to a kit for screening for enzyme inhibitors.

The inventions listed as Groups I-VI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The special technical feature of groups I-VI is a signaling aptamer having a first affinity for a substance A and a second, different affinity for a product B.

However, this cannot be the special technical feature because signaling aptamers having differential affinities for substrates and products are shown in the prior art. For example, Gallivan (US Patent Application Publication 2003/0064931 A1) discloses aptamer constructs for monitoring and detecting a wide range of enzymatic activities. The aptamer is operably linked to a reporter gene encoding, for example, a fluorescent or toxic protein (paragraph 54). When bound to the preferred ligand, the aptamer may inhibit or enhance the expression of the reporter gene, resulting in a readily detectable signal (cell death or fluorescence) representative of changes in the concentration of the preferred ligand (paragraphs 61-70). Having high affinity for a first substrate and low or poor affinity for a reaction product of the substrate, the aptamer constructs are said to be useful for the detection of enzyme activities that convert one substance into another, wherein the aptamer preferably binds the precursor molecule but not the product. In the presence of the appropriate enzyme, a reduction in the levels of the precursor molecule results in a detectable signal, such as fluorescence, or, in the case of Examples 1 and 2, beginning at paragraph 78, cell survival. One of skill would recognize many variations of the aptamer constructs as disclosed therein for measuring and detecting enzyme-catalyzed reactions, wherein the signal produced would either decrease or increase depending on the design of the aptamer/expression construct, and whether the aptamer preferably binds the substrate or the product.

Accordingly, unit of invention is lacking *a posteriori*. (MPEP §1850.II).

Further Elections

Should Applicant elect to prosecute one of Groups I, II, or IV, Applicant must further elect a single invention thereof as follows.

Each of Groups I, II, and IV contains claims to a plurality of different methods that do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features. For example, the special technical feature of the method recited in claim 3 is the step of measuring an increase in the amplitude of the signal, which is not present in nor required by the method of claim 4, which comprises determining a decrease in amplitude. The different methods may comprise different signaling aptamers, having different designs, and therefore, different special technical features. Similar rationale applies to the methods of claims 7 and 8, which would require signaling aptamers for detecting either the addition or removal of a functional group to a substance A. In a similar fashion, claim 11 recites at least 6 alternative substrates, defining separate and distinct aptamers, reactions, and assays, having different special technical features unique to the materials and steps required to practice the method. For the same reasons, the methods recited in claim 12 define different enzymatic reactions, which would most likely require separate, structurally distinct aptamers, substrates, and method steps for monitoring the reactions catalyzed by each enzyme. Similar reasoning applied to each of claims 14, 15, and 18 in Groups II and IV.

Therefore, the different methods of claims 3, 4, 7, 8, 11, 12, 14, 15, and 18 lack of unity of invention relative to one another *a priori*.

Applicant is required to elect a single method for prosecution on the merits with the elected group. This is not a species election but an election of a single inventive concept. With regard to claims 3, 4, 7, 8, 11, and 12 of Group I, Applicant may elect one invention from claims 3 and 4 together with one invention from 7 and 8, 11, and 12 so long as the elections read on a single inventive concept. The Examiner recognizes that increase or decrease in signal may reasonably apply to either the addition or removal of a functional group, which may in turn be characteristic of one of the enzymes and/or substrates recited in claims 11 and 12. Many different combinations may be possible and are too numerous to categorize herein. Applicant is in the best position to select the appropriate combination and the one desired for prosecution on the merits. Each combination represents a different special technical feature.

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The reply must also identify the claims readable on the elected invention, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election. Should Applicant amend the claims in response to this Requirement, Applicant should show how the amendment is supported by the original disclosure (MPEP 2163).

Although Applicant is required to further elect one invention for prosecution, Applicant is advised that linking claim practice is in effect, as explained below.

Linked Inventions

Claim 1 link(s) the inventions of claims 3, 4, 7, 8, 11, and 12; claim 13, the inventions of claims 14 and 15; and claim 17, the inventions of claim 18. The restriction requirement among the linked inventions is **subject to** the nonallowance of the linking claim(s). Upon the indication of allowability of the linking claim(s), the restriction requirement as to the linked inventions **shall** be withdrawn and any claim(s) depending from or otherwise requiring all the limitations of the allowable linking claim(s) will be rejoined and fully examined for patentability in accordance with 37 CFR 1.104 **Claims that require all the limitations of an allowable linking claim** will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

Applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, the allowable linking claim, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Where a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Rejoinder

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of

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the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Conclusion

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Should applicant traverse on the ground that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C.103(a) of the other invention.

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Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louis V. Wollenberger whose telephone number is 571-272-8144. The examiner can normally be reached on M-F, 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Schultz can be reached on (571)272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Louis Wollenberger/

Examiner, AU 1635

November 17, 2007